

## WE CLAIM:

5 1. An apparatus for controlling data unit communications between a plurality of mobile stations, each of the mobile stations arranged to maintain communication links with the apparatus, the apparatus comprising:

means for grouping at least two of the plurality of mobile stations as members of a private network group;

10 means for determining if a first mobile station sending a data unit and a second mobile station scheduled to receive a data unit are both members of the private network group; and

means for enabling communication of the data unit from the first mobile station to the second mobile station only if they are both members of the private network group.

15 2. An apparatus according to claim 1, wherein each of the mobile stations has a corresponding Home Location Registration (HLR);

20 wherein the means for grouping at least two of the plurality of mobile stations as members of a private network group comprises means for listing the HLRs of the at least two mobile stations within a private network group table; and

25 wherein the means for determining if the first and second mobile stations are both members of the private network group comprises means for determining if the HLRs of the first and second mobile stations are both listed within the private network group table.

30 3. An apparatus according to claim 2, wherein each of the mobile stations further has a corresponding data address

and the data unit includes a data address corresponding to a desired destination mobile station as a destination address;

wherein the means for grouping at least two of the plurality of mobile stations as members of a private network group further comprises means for listing the data addresses of the at least two mobile stations within the private network group table corresponding to their HLRs; and

wherein the means for determining if the first and second mobile stations are both members of the private network group further comprises means for determining the HLR of the second mobile station by looking-up the destination address of the data unit within the private network group table.

4. An apparatus according to claim 3, wherein the data addresses are Internet Protocol (IP) addresses.

5. An apparatus according to claim 1, wherein each of the mobile stations has a corresponding node registration;

wherein the means for grouping at least two of the plurality of mobile stations as members of a private network group comprises means for listing the node registrations of the at least two mobile stations within a private network group table; and

wherein the means for determining if the first and second mobile stations are both members of the private network group comprises means for determining if the node registrations of the first and second mobile stations are both listed within the private network group table.

6. An apparatus according to claim 5, wherein the plurality of mobile stations comprises a first set of at least

one mobile station within a first cell cluster and a second set of at least one mobile station within a second cell cluster, the node registrations corresponding to the mobile stations of the first group being respective Home Location Registrations (HLRs) and the node registrations corresponding to the mobile stations of the second group all being a data address corresponding to a second apparatus; and

wherein the apparatus further comprises means for adding a header to the data unit if the apparatus determines that the first and second mobile stations are both members of the private network group and the second mobile station has the data address corresponding to the second apparatus as its node registration, the header comprising the data address corresponding to the second apparatus as a destination address.

7. An apparatus according to claim 6, wherein the data address corresponding to the second apparatus is an Internet Protocol (IP) address.

8. An apparatus according to claim 1 further comprising means for determining if the data unit is of a type requiring limited access, and means for enabling communication of the data unit from the first mobile station to the second mobile station if the data unit is not of a type requiring limited access, even if the first and second mobile stations are not both members of the private network group.

9. An apparatus according to claim 1 further comprising means for sending a bandwidth request signal prior to enabling communication of the data unit if the second mobile station has

insufficient bandwidth capabilities to receive the data unit on the communication link being maintained.

10. An apparatus according to claim 1 further comprising  
5 means for sending an error signal to the first mobile station if the first and second mobile stations are not both members of the private network group.

11. An apparatus for controlling data unit communications  
10 between a plurality of mobile stations, each of the mobile stations arranged to maintain communication links with the apparatus, the apparatus comprising:

means for grouping at least two of the plurality of mobile stations as members of a private network group;

15 means for determining if a first mobile station sending a data unit and a second mobile station scheduled to receive a data unit are both members of the private network group; and

20 means for disabling communication of the data unit from the first mobile station to the second mobile station if they are not both members of the private network group.

12. An apparatus for controlling data unit communications  
25 between a first set of at least one mobile telephone station and a second set of at least one fixed wire telephone station, the mobile station arranged to maintain a communication link with the apparatus, the apparatus comprising:

means for grouping at least the mobile and fixed wire telephone stations as members of a private network group;

30 means for determining if a first telephone station sending a data unit and a second telephone station scheduled to

receive a data unit are both members of the private network group; and

means for enabling communication of the data unit from the first telephone station to the second telephone station only if they are both members of the private network group.

13. An apparatus according to claim 12, wherein each of the telephone stations has a corresponding node registration;

wherein the means for grouping at least two of the plurality of telephone stations as members of a private network group comprises means for listing the node registrations of the at least two telephone stations within a private network group table; and

wherein the means for determining if the first and second telephone stations are both members of the private network group comprises means for determining if the node registrations of the first and second telephone stations are both listed within the private network group table.

14. An apparatus according to claim 13, wherein the node registration for the mobile telephone station of the first set is a Home Location Registration (HLR) corresponding to the particular mobile telephone station.

15. An apparatus according to claim 13, wherein the node registration for the fixed wire telephone station of the second set is a data address corresponding to a second apparatus coupled to the fixed wire telephone station.

16. An apparatus according to claim 13, wherein the means for enabling communication of the data unit from the first telephone station to the second telephone station comprises means for attaching a header to the data unit, the header comprising a data address corresponding to a second apparatus coupled to the second telephone station as a destination address; and means for outputting the resulting data unit to the data network for routing.

17. An apparatus according to claim 15, wherein the data address corresponding to the second apparatus is an Internet Protocol (IP) address.

18. A computing apparatus according to claim 16, wherein the second apparatus is a server coupled to a Local Area Network (LAN).

19. An apparatus according to claim 13, wherein each of the telephone stations further has a corresponding data address and the data unit includes a data address corresponding to a desired destination mobile station as a destination address;

wherein the means for grouping at least two of the plurality of telephone stations as members of a private network group further comprises means for listing the data addresses of the at least two telephone stations within the private network group table corresponding to their node registrations; and

wherein the means for determining if the first and second telephone stations are both members of the private network group further comprises means for determining the node registration of the second telephone station by looking-up the

destination address of the data unit within the private network group table.

20. An apparatus according to claim 19, wherein the data  
5 addresses are Internet Protocol (IP) addresses.

21. An apparatus according to claim 12 further comprising  
means for determining if the data unit is of a type requiring  
limited access, and means for enabling communication of the  
10 data unit from the first telephone station to the second  
telephone station if the data unit is not of a type requiring  
limited access, even if the first and second telephone stations  
are not both members of the private network group.

22. A private network comprising a data network, a  
15 plurality of apparatus coupled to the data network, and a  
plurality of sets of at least one telephone station which are  
arranged to maintain communication links with a respective one  
of the apparatus;

20 wherein each of the apparatus comprises means for  
grouping at least two of the plurality of telephone stations as  
members of a private network group; means for determining if a  
first telephone station that maintains a communication link  
with the particular apparatus and is sending a data unit, and a  
25 second telephone station that maintains a communication link  
with a second one of the apparatus and is scheduled to receive  
a data unit are both members of the private network group; and  
means for enabling communication of the data unit from the  
first telephone station, via the data network, to the second  
30 apparatus only if the first and second telephone stations are  
both members of the private network group.

23. A private network according to claim 22, wherein each of the telephone stations within the plurality of groups has a corresponding node registration;

5 wherein the means for grouping at least two of the plurality of telephone stations as members of a private network group comprises means for listing the node registrations of the at least two telephone stations within a private network group table; and

10 wherein the means for determining if the first and second telephone stations are both members of the private network group comprises means for determining if the node registrations of the first and second telephone stations are both listed within the private network group table.

15 24. A private network according to claim 23, wherein first and second ones of the plurality of sets of at least one telephone station comprises first and second sets of mobile stations respectively that are located within respective first and second cell clusters, the first and second sets being coupled to first and second ones of the plurality of apparatus;

20 wherein, within the first apparatus, the node registrations corresponding to the mobile stations of the first set are respective Home Location Registrations (HLRs) and the node registrations corresponding to the mobile stations of the second set are a data address corresponding to the second apparatus; and

25 wherein, within the second apparatus, the node registrations corresponding to the mobile stations of the second set are respective HLRs and the node registrations

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corresponding to the mobile stations of the first set are a data address corresponding to the first apparatus.

25. A private network according to claim 22, wherein the  
5 means for enabling communication of the data unit from the first telephone station to the second apparatus comprises means for attaching a header to the data unit, the header comprising a data address corresponding to the second apparatus as a destination address; and means for outputting the resulting  
10 data unit to the data network for routing.

26. A private network according to claim 22, wherein at least one of the plurality of apparatus is an intelligent peripheral coupled within a third generation wireless network.

27. A private network according to claim 22, wherein at least one of the plurality of apparatus is a server coupled to a Local Area Network (LAN).

28. A wireless network comprising an apparatus, a radio network controller coupled to the apparatus, at least one base transceiver station coupled to the radio network controller, and a plurality of mobile stations that are each arranged to maintain a communication link with one of the at least one base  
25 transceiver station;

wherein the apparatus comprises means for grouping at least two of the plurality of mobile stations as members of a private network group; means for determining if a first mobile station sending a data unit and a second mobile station  
30 scheduled to receive a data unit are both members of the private network group; and means for enabling communication of

the data unit from the first mobile station to the second mobile station only if they are both members of the private network group.

5 29. A wireless network according to claim 28, wherein the radio network controller comprises means for adjusting the bandwidth between each of the mobile stations and its respective one of the base transceiver stations.

10 30. A wireless network according to claim 28 further comprising a mobile switching center coupled between the apparatus and the radio network controller, the mobile switching center comprising means for controlling the switching operations of the wireless network within a predefined cell  
15 cluster.

31. A wireless network according to claim 28, wherein at least one of the mobile stations comprises a personal computer with a wireless modem.

20 32. A wireless network according to claim 28, wherein at least one of the mobile stations comprises an interface apparatus arranged to be coupled to a digital data processing component and arranged to maintain a communication link with  
25 one of the at least one base transceiver station, the interface apparatus comprising:

an interface port comprising means for receiving digital data in a first format from the digital data processing component, means for converting the digital data from the first  
30 format to a second format, and means for outputting the digital data in the second format;

a computing device, coupled to the interface port, comprising means for receiving the digital data in the second format from the interface port; means for attaching a data unit overhead including source and destination addresses to the received digital data in order to generate a data unit, the source address being a predefined data address for the interface apparatus and the destination address being a stored data address; and means for outputting the data unit; and

a wireless network transceiver, coupled to the computing device, comprising means for receiving the data unit and means for transmitting it to the base transceiver station.

33. An interface apparatus according to claim 32, wherein the component interface port is a Universal Serial Bus (USB) port and the first format is a format required for transmitting digital data over a USB cable.

34. A wireless network according to claim 28, wherein at least one of the mobile stations comprises an interface apparatus arranged to be coupled to a digital data processing component and arranged to maintain a communication link with one of the at least one base transceiver station, the interface apparatus comprising:

a wireless network transceiver comprising means for receiving a data unit from the base transceiver station that comprises digital data in a first format and a data unit overhead including source and destination addresses, the destination address being a predefined data address for the interface apparatus, and means for outputting the data unit;

a computing device, coupled to the wireless network transceiver, comprising means for receiving the data unit from the wireless network transceiver, means for removing the data unit overhead from the data unit, and means for outputting the digital data in the first format; and

a component interface port, coupled to the computing device, comprising means for receiving the digital data in the first format, means for converting the received digital data from the first format to a second format, and means for outputting the digital data in the second format to the digital data processing component.

35. An interface apparatus according to claim 34, wherein the component interface port is a Universal Serial Bus (USB) port and the second format is a format required for transmitting digital data over a USB cable.

35. Within a network comprising a plurality of mobile stations that each maintain a communication link with a respective base transceiver station, a method of enabling communication of a data unit from a first mobile station to a second mobile station, the method comprising:

grouping/at least two of the plurality of mobile  
stations as members of a private network group;

determining if the first mobile station sending the data unit and the second mobile station scheduled to receive the data unit are both members of the private network group; and

enabling communication of the data unit from the first mobile station to the second mobile station only if they

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are both members of the private network group.

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